Listing of Claims

1   Claim 1 (Previously Presented): A method of processing a packet in a gateway device

2   connected to a plurality of communication paths providing connection with corresponding

3   networks, said method comprising:

4   providing a search utility in said gateway, said search utility enabling the retrieval of

5   both a forwarding information and a network address translation (NAT) information

6   necessary for processing said packet in a single search operation, wherein said NAT

7   information specifies a new address for an original address in said packet, said forwarding

8   information specifying one of said plurality of communication paths to forward said packet;

9   receiving said packet containing said original address;

10   determining said forwarding information and said NAT information for said packet

11   in a single search operation by using said search utility;

12   substituting said new address for said original address in said packet; and

13   forwarding said packet with said new address on the specified one of said plurality of

14   communication paths in said forwarding information.

1   Claim 2 (Previously Presented): The method of claim 1, wherein said providing

2   comprises maintaining a single table for both said forwarding information and said NAT

3   information.

1   Claim 3 (Previously Presented): The method of claim 2, wherein said maintaining

2   comprises storing said single table in a content addressable memory (CAM) indexed by a

3   source address and a destination address, wherein said determining comprises providing the

4   source address and destination address in said packet as a key to said CAM to retrieve said

5   forwarding information and said NAT information.

1   Claim 4 (original): The method of claim 3, wherein said CAM comprises a multi-way

2   CAM.

1   Claim 5 (Previously Presented): The method of claim 2, wherein said gateway device

2   comprises a service selection gateway (SSG) connecting a plurality of remote systems to a

3   plurality of service domains, wherein one of said original address and said new address

4   comprises a local address of a remote system and the other address comprises an external

5   address in a service domain for said remote system, said maintaining further comprises:

6   storing NAT information and forwarding information in a plurality of tables

7   partitioned according to service domains such that forwarding information and NAT

8   information related to the same service domain is stored in the same one of said plurality of

9   tables.

1   Claim 6 (Previously Presented): The method of claim 5, wherein at least one of said

2   plurality of tables stores NAT information and forwarding information related to at least a

3   first service domain and a second service domain contained in said plurality of service

4   domains, said first service domain and said second service domain respectively containing

5   a first set of addresses and a second set of addresses accessible from said gateway device,

6   wherein said first set of addresses and said second set of addresses do not overlap.

1   Claim 7 (Original): The method of claim 1, wherein said forwarding information

2   comprises an interface on said gateway device, wherein said forwarding comprises sending

3   said packet on said interface, wherein said packet is received in the form of an Internet

     Protocol (IP) packet.

1   Claim 8 (Previously Presented): A gateway device for processing a packet, said

2   gateway device comprising:

3   interface means coupled to a plurality of communication paths, wherein each

4   communication path provides connection with a corresponding network;

5   means for searching enabling the retrieval of both a forwarding information and a

6   network address translation (NAT) information necessary for processing said packet in a

7   single search operation, wherein said NAT information specifies a new address for an

8   original address in said packet, and said forwarding information specifying one of

9   said plurality of communication paths to forward said packet;

10   means for receiving said packet containing said original address;

11   means for determining said forwarding information and said NAT information for said

12   packet by using said single search;

13   means for substituting said new address for said original address in said packet; and

14   means for forwarding said packet with said new address on the communication path

15   specified in said forwarding information.

1   Claim 9 (Previously Presented): The gateway device of claim 8, wherein said means

2   for searching maintains a single table for both said forwarding information and said NAT

3   information

1   Claim 10 (Previously Presented): The gateway device of claim 9, wherein a memory

2   means stores said single table in a content addressable memory (CAM) indexed by a source

3   address and a destination address, wherein said means for determining comprises means for

4   providing the source address and destination address in said packet as a key to said CAM to

5   retrieve said forwarding information and said NAT information.

1   Claim 11 (Original): The gateway device of claim 10, wherein said CAM comprises

2   a multi-way CAM, said packet comprises an IP packet, and said forwarding information

3   comprises an interface on said gateway device, wherein said means for forwarding sends said

4   packet on said interface.

1   Claim 12 (Previously Presented): The gateway device of claim 10, wherein said

2   gateway device comprises a service selection gateway (SSG) connecting a plurality of remote

3   systems to a plurality of service domains, wherein one of said original address and said new

4   address comprises a local address of a remote system and the other address comprises an

5   external address in a service domain for said remote system, said memory means stores NAT

6   information and forwarding information in a plurality of tables partitioned according to

7   service domains such that forwarding information and NAT information related to the same

8   service domain is stored in the same one of said plurality of tables.

1   Claim 13 (Previously Presented): The gateway device of claim 12, wherein at least

2   one of said plurality of tables stores NAT information and forwarding information related to

3   at least a first service domain and a second service domain contained in said plurality of

4   service domains, said first service domain and said second service domain respectively

5   containing a first set of addresses and a second set of addresses accessible from said gateway

6   device, wherein said first set of addresses and said second set of addresses do not overlap.

1   Claim 14 (Currently Amended): A computer readable medium ~~carrying~~ storing one

2   or more sequences of instructions for causing a gateway device to process a packet, said

3   gateway device connected to a plurality of communication paths providing connection with

4   corresponding networks, wherein execution of said one or more sequences of instructions by

5   one or more processors contained in said gateway device causes said gateway device ~~one or~~

6   ~~more processors~~ to perform the actions of:

7   providing a search utility in said gateway, said search utility enabling the retrieval of

8   both a forwarding information and a network address translation (NAT) information

9   necessary for processing said packet in a single search operation, wherein said NAT

10   information specifies a new address for an original address in said packet and said forwarding

11   information specifies one of said plurality of communication paths to forward said packet;

12   receiving said packet containing said original address;

13   determining said forwarding information and said NAT information for said packet

14   in a single search operation by using said search utility;

15   substituting said new address for said original address in said packet; and

16   forwarding said packet with said new address on the communication path specified

17   in said forwarding information.

1   Claim 15 (Previously Presented): The computer readable medium of claim 14,

2   wherein said providing comprises maintaining a single table for both said forwarding

3   information and said NAT information.

1   Claim 16 (Previously Presented): The computer readable medium of claim 15,

2   wherein said maintaining comprises storing said single table in a content addressable memory

3   (CAM) indexed by a source address and a destination address, wherein said determining

4   comprises providing the source address and destination address in said packet as a key to said

5   CAM to retrieve said forwarding information and said NAT information.

1   Claim 17 (original): The computer readable medium of claim 16, wherein said CAM

2   comprises a multi-way CAM and said packet is received in the form of an IP packet.

1   Claim 18 (Previously Presented): The computer readable medium of claim 15,

2   wherein said gateway device comprises a service selection gateway (SSG) connecting a

3   plurality of remote systems to a plurality of service domains, wherein one of said original

4   address and said new address comprises a local address of a remote system and the other

5   address comprises an external address in a service domain for said remote system, said

6   maintaining further comprises:

7   storing NAT information and forwarding information in a plurality of tables

8   partitioned according to service domains such that forwarding information and NAT

9   information related to the same service domain is stored in the same one of said plurality of

10   tables.

1   Claim 19 (Previously Presented): The computer readable medium of claim 18,

2   wherein at least one of said plurality of tables stores NAT information and forwarding

3   information related to at least a first service domain and a second service domain contained

4   in said plurality of service domains, said first service domain and said second service domain

5   respectively containing a first set of addresses and a second set of addresses accessible from

6   said gateway device, wherein said first set of addresses and said second set of addresses do

7   not overlap.

1   Claim 20 (Previously Presented): A gateway device for processing a packet, said

2   gateway device comprising:

3   a plurality of ports, each of said plurality of ports being coupled to a corresponding

4   one of a plurality of communication paths providing connection with a corresponding

5   network;

6   a memory unit storing a forwarding information and a network address translation

7   (NAT) information necessary for processing said packet, wherein said NAT information

8   specifies a new address for an original address in said packet, and said forwarding

9   information specifying one of said plurality of communication paths to forward said packet;

10   an inbound interface receiving said packet containing said original address;

11   a forwarding and NAT block determining said forwarding information and said NAT

12   information for said packet using a single search, said forwarding and NAT block substituting

13   said new address for said original address in said packet; and

14   an outbound interface forwarding said packet with said new address on the

15   communication path specified in said forwarding information.

1   Claim 21 (Previously Presented): The gateway device of claim 20, wherein said

2   memory unit stores said forwarding information and said NAT information in a single table.

1   Claim 22 (Previously Presented): The gateway device of claim 21, wherein said

2   memory unit comprises a content addressable memory (CAM) indexed by a source address

3   and a destination address, wherein said forwarding and NAT block sends the source address

4   and destination address in said packet as a key to said CAM to retrieve said forwarding

5   information and said NAT information.

1   Claim 23 (original): The gateway device of claim 22, wherein said CAM comprises

2   a multi-way CAM and said packet comprises an IP packet.

1   Claim 24 (Previously Presented): The gateway device of claim 21, wherein said

2   gateway device comprises a service selection gateway (SSG) connecting a plurality of remote

3   systems to a plurality of service domains, wherein one of said original address and said new

4   address comprises a local address of a remote system and the other address comprises an

5   external address in a service domain for said remote system, wherein said memory unit stores

6   NAT information and forwarding information in a plurality of tables partitioned according

7   to service domains such that forwarding information and NAT information related to the

8   same service domain is stored in the same one of said plurality of tables.

1   Claim 25 (Previously Presented): The gateway device of claim 24, wherein at least

2   one of said plurality of tables stores NAT information and forwarding information related to

3   at least a first service domain and a second service domain contained in said plurality of

4   service domains, said first service domain and said second service domain respectively

5   containing a first set of addresses and a second set of addresses accessible from said gateway

6   device, wherein said first set of addresses and said second set of addresses do not overlap.

1   Claim 26 (original): The gateway device of claim 25, further comprising a service

2   selection block determining a specific service to which said packet relates to and causes said

3   packet to be processed according to a corresponding one of said plurality of tables.

1   Claim 27 (Previously Presented): The gateway device of claim 26, further comprising

2   a plurality of forwarding and NAT blocks wherein each of said plurality of forwarding and

3   NAT blocks is coupled to a corresponding one of a plurality of memory units, wherein each

4   of said plurality of memory units stores one of said plurality of tables.